

## Environmental Assessment Checklist

**Project Name:** Rattler Gulch Timber Sale  
**Proposed Implementation Date:** June 2019  
**Proponent:** Anaconda Unit, Southwest Land Office, Montana DNRC  
**County:** Granite and Powell

### Type and Purpose of Action

#### Description of Proposed Action:

The Anaconda Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the Rattler Gulch Timber Sale. The project is located approximately 6 miles northwest of Drummond, MT (refer to Attachments A-1 Vicinity map and A-2 Project map) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	All	640	529

Objectives of the project include:

- Harvest Douglas-fir being impacted by Western Spruce Budworm and salvage Lodgepole pine killed by Mountain Pine Beetle, consistent with MCA 77-5-207.
- Promote long-term revenue generating capability through improved forest health with emphasis on biodiversity and regeneration of forested stands.
- Reduce current stocking levels in Douglas-fir to improve growth productivity.

Proposed activities include:

Action	Quantity
<b>Proposed Harvest Activities</b>	<b># Acres</b>
Clearcut	
Seed Tree	
Shelterwood	529
Selection	
Commercial Thinning	
Salvage	
<b>Total Treatment Acres</b>	<b>529</b>
<b>Proposed Forest Improvement Treatment</b>	<b># Acres</b>
Pre-commercial Thinning	
Planting	
<b>Proposed Road Activities</b>	<b># Miles</b>
New permanent road construction	0

Action	Quantity
New temporary road construction	0.75
Road maintenance	14.25
Road reconstruction	2.2
Road abandoned	0.25
Road reclaimed	
<b>Other Activities</b>	
Prescribed burning	200 acres

<b>Duration of Activities:</b>	6/1 – 9/1; 12/1 – 3/1
<b>Implementation Period:</b>	June 2019 – November 2022

The lands involved in this proposed project are held in trust by the State of Montana. (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the DNRC are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for the beneficiary institutions (Section 77-1-202, MCA).

The DNRC would manage lands involved in this project in accordance with:

- The State Forest Land Management Plan (DNRC 1996),
- Administrative Rules for Forest Management (ARM 36.11.401 through 471),
- The Montana DNRC Forested State Trust Lands Habitat Conservation Plan (HCP) (DNRC 2010)
- All other applicable state and federal laws.

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## Project Development

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### SCOPING:

- PUBLIC SCOPED:
  - Letters were sent to adjacent landowners and interested parties on the Statewide scoping list. A legal notice was placed in the Missoulian.
- AGENCIES SCOPED:
  - Bureau of Land Management, Missoula Field Office.

DNRC specialists were consulted, including: Andrea Stanley, SWLO Hydrologist; Garrett Schairer, SWLO Wildlife Biologist; Patrick Rennie; DNRC Archaeologist.

Montana Fish Wildlife and Parks provided comments pertaining to road closures in the area and ensuring restricted access to lands where FWP holds conservation easements. No other external comments were received. Internal issues and concerns were incorporated into project planning and design and will be implemented in associated contracts.

**OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:** *(Conservation Easements, Army Corps of Engineers, road use permits, etc.)*

- **United States Fish & Wildlife Service-** DNRC is managing the habitats of threatened and endangered species on this project by implementing the Montana DNRC Forested Trust Lands HCP and the associated Incidental Take Permit that was issued by the United States Fish & Wildlife Service (USFWS) in February of 2012 under Section 10 of the Endangered Species Act. The HCP identifies specific conservation strategies for managing the habitats of grizzly bear, Canada lynx, and three fish species: bull trout, westslope cutthroat trout, and Columbia redband trout. This project complies with the HCP. The HCP can be found at [www.dnrc.mt.gov/HCP](http://www.dnrc.mt.gov/HCP).
- **Montana Department of Environmental Quality (DEQ)-** DNRC is classified as a major open burner by DEQ and is issued a permit from DEQ to conduct burning activities on state lands managed by DNRC. As a major open-burning permit holder, DNRC agrees to comply with the limitations and conditions of the permit.
- **Montana/Idaho Airshed Group-** The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2006). The Group determines the delineation of airsheds and impact zones throughout Idaho and Montana. Airsheds describe those geographical areas that have similar atmospheric conditions, while impact zones describe any area in Montana or Idaho that the Group deems smoke sensitive and/or having an existing air quality problem (Montana/Idaho Airshed Group 2006). As a member of the Airshed Group, DNRC agrees to burn only on days approved for good smoke dispersion as determined by the Smoke Management Unit.

## ALTERNATIVES CONSIDERED:

**No-Action Alternative:** No forested acres would be treated.

**Action Alternative** The action alternative would treat 529 acres of forested stands through primarily shelterwood silvicultural prescriptions. No new permanent road construction would be required and approximately 0.75 miles of new temporary road would be built. Approximately 10 miles of existing road would be maintained or improved to meet BMP's.

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## Impacts on the Physical Environment

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Evaluation of the impacts on the No-Action and Action Alternatives including **direct, secondary, and cumulative** impacts on the Physical Environment.

### VEGETATION:

**Forested Land Existing Conditions:** The section currently has 621 acres of forested cover with 597 acres being Douglas-fir and 24 acres being Subalpine Fir. Much of the Douglas-fir is being impacted by Western Spruce Budworm. There are several large Ponderosa Pine (21" DBH) scattered throughout the parcel. The Mountain Pine Beetle infestation has mostly run its course killing the majority of Lodgepole pine greater than 7" DBH and several Ponderosa Pine. Many of these dead trees have fallen to the ground. The following table shows the age class distribution as estimated by the Department's Stand Level Inventory (SLI).

ACRES	Cover Type	Age Class
582.4	DF	150-199
14.2	DF	200+
24.3	SAF	100-149

SLI records and field surveys do not indicate any stands meet the Department's Old Growth Criteria, primarily due to lack of large live trees (> 21" DBH, >170 years).

A query of the Montana Natural Heritage Program reports no plant species of concern within the project area and none were found during field recon.

### **Noxious Weeds:**

The state land project section has limited infestations of knapweed, thistle and houndstongue, that mainly occurs along existing roads and open areas and are more prolific on adjacent lands.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Noxious Weeds		X				X				X				1
Rare Plants	X				X				X					
Vegetative community		X				X				X				2
Old Growth	X				X				X					
<b>Action</b>														
Noxious Weeds			X				X				X			3, 5
Rare Plants		X				X				X				
Vegetative community		X				X				X				4
Old Growth		X				X				X				

### *Comments:*

#### **No Action**

1. With no action, noxious weeds would continue to occur on State and adjacent lands spread by natural disturbance. The grazing licensee would be responsible for noxious weed management.
2. No measurable change would be expected with the no action alternative. Mountain Pine beetle has run its course and killed most of the susceptible trees. Those trees that have been killed and not fallen over would likely fall over and create a heavy down fuel load, which could contribute to a fire of greater intensity creating additional impacts to other resources. Western Spruce budworm would continue to stress and impact trees until an act of nature reduces the budworm populations.

#### **Action**

3. Under the action alternative, increased disturbance in the project area, as well as a more open canopy, could lead to an increased spread of noxious weeds.
4. With the action alternative, no measurable change would be anticipated to the vegetative community. Forested patch size and shape would not change but densities would be

greatly reduced. Based upon adjacent harvest areas, natural regeneration would be expected to occur quickly.

***Vegetation Mitigations:***

5. DNRC would complete herbicide treatments of spot infestations on the state project parcel and segments of the access roads on adjacent ownerships to control existing and new weeds. All off road equipment would be washed and inspected prior to start of work. All new roads would be reseeded to site adapted grass to reduce the threat of noxious weed spread. Project areas would be monitored for noxious weeds after implementation and herbicide may be applied when and if needed. The grazing licensee would continue to be responsible for noxious weed management post-harvest.

**SOIL DISTURBANCE AND PRODUCTIVITY:**

**Existing Conditions and Affected Environment:**

The project area is located within the Garnet Range with underlying geology including Mississippian and Devonian limestone and other sedimentary rocks; and Tertiary igneous rocks including andesite, basalt, and latite (Lonn et al. 2010). Much of the exposed rock in the area is colluvium with occasional occurrences of exposed bedrock.

Soils in the project area composed mainly of deep cobbly and gravelly clay loams on slopes 0-45%. Convex slopes and ridges have shallow to moderately deep cobbly clay loams (Helmville, Trapps) with moderate risk of erosion and compaction. Concave and moderate slopes have deep cobbly clay loams (Bignell) and clay loam soils (Crow). Crow soils are localized to draw bottoms and moist meadows areas and has low soil strength when wet. Erosion potential is moderate to high and soils are subject to compaction and rutting if operated on when wet. Portions of the existing roads were poorly located in the past with some steep grades and across concave swales with clay rich soils.

Most slopes within the area are  $\leq 25\%$  and have high content of coarse angular rock fragments with occasional rock outcrops. Soil creep was observed along a small portion of localized slopes, demonstrated by occasional trees tilted or deformed by gradual slope movement. Signs of slope instability was not observed in the project area. Figure S1 indicates soil type distributions and topography within the project area.

Existing road network conditions including erosion and sediment delivery risk are described in the *Water Quality and Quantity* section of this EA. Soil conditions relevant to yarding including existing and proposed skid trails are described in this section of the EA.

**Past and Current Management Activities**

Past and current disturbances in the project area include timber harvest, vegetation management, grazing, roads construction and maintenance, and recreational use. Known specifics on these past and current disturbances are listed below.

- Previous selection harvest over 60 years ago and earlier selective harvests.
- Permitted and unpermitted fuel wood collection.

- The section containing the project (T12N, R13W, S36) currently has an active grazing license with the State that currently allows for 67 animal unit grazing for one month (AUM) between June 1 and September 30<sup>th</sup> and expires February 2027.
- Open roads, easements, and an informal road user association (RUA) road have regular year-around use.
- Road improvements completed in 2012.
- Unauthorized use of some closed roads and skid trails.
- The project area is popular with local hunters and recreational users.
- No recent fire activity.

### ***Existing Soil Disturbance and Productivity***

Evidence of past and current soil disturbances within the project area include rutted open and closed roads and skid trails, stumps, and some soil compaction. Soil compaction is observed along existing skid trails and is indicated by reduced conifer regeneration and reduced plant vigor along skid trail alignments and platy soil structures with horizontal orientation. Extensive roads and trails access the project area and have an estimated total cover of less than 10%.

Grazing disturbances include livestock-caused hoof pugging and sheer and hummocks occur along all riparian corridors and livestock trails along hillslopes.

Four 100-foot transects<sup>1</sup> completed in September 2018 in the proposed harvest units indicate significant spatial variability in coarse woody debris (CWD) concentration. The minimum observed CWD concentration is 2.7 tons/acre. Figure S1 CWD transect locations and volumes within the project area.

These existing conditions would likely persist under the no-action alternative.

Soil Disturbance and Productivity	Impact with mitigation											
	Direct				Secondary				Cumulative			
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High
<b><i>No-Action</i></b>												
Slope Stability	X				X				X			
Physical Disturbance (Compaction and Displacement)		X			X					X		
Hillslope Erosion		X			X					X		
Nutrient Cycling	X				X				X			
Soil Productivity	X				X				X			

<sup>1</sup> CWD transects completed by tallying and recording the diameter of woody debris ≥3-inch diameter and hard or decaying conditions. Conversion to ton/acre is completed using a formula described by Brown (1974) using the slope of the sampling plane and constants for specific gravity, slope, and transect length. The formulas and constants simplified by Brown (1974) for the northwest region is summarized below.

For hard (sound) wood condition:  $\text{ton/acre} = 4.656 \sum d^2 c / L$

For soft (rotten) wood condition:  $\text{ton/acre} = 3.492 \sum d^2 c / L$

Where

$\sum d^2$  is the sum of the squared diameters of each intersected piece of CWD ( $\geq 3\text{in.}$ )

$c$  is the average slope correction factor (see Brown 1974)

$L$  is the total length of the transect (feet)

### **Mitigations**

Below is a list of project elements that reduce the potential impacts of the project and current disturbances on soils. The project includes timber harvest, vegetation management, road construction, yarding with ground-based equipment, and potentially prescription burning. These project elements can be considered mitigation.

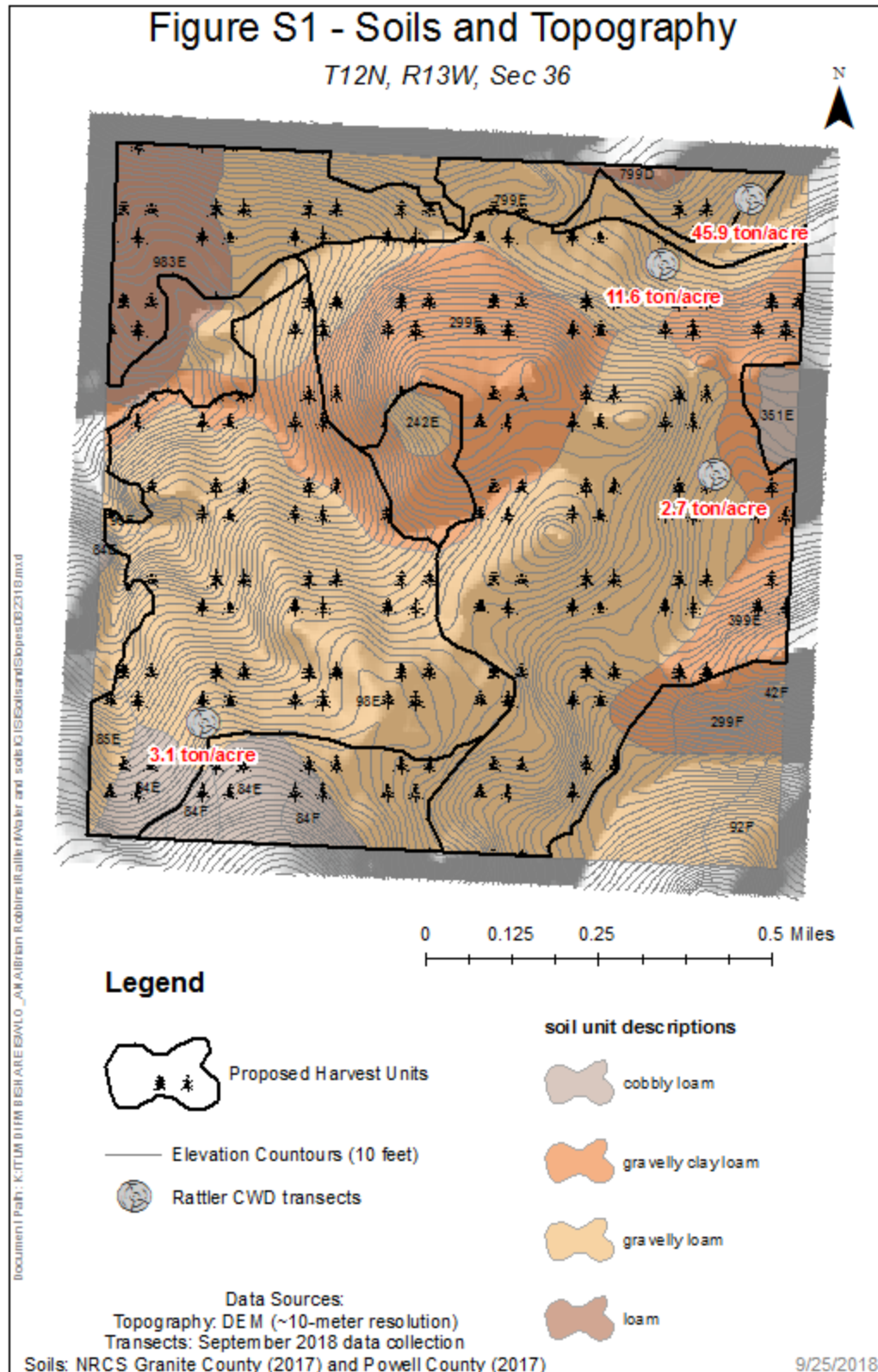
- Drainage improvement and maintenance work would be completed on existing roads within state lands and on the haul route between the project area and the nearest county road. The project manager has completed a road log for location and design of drainage improvements on existing roads.
- Existing skid trails would be used as much as possible. However, abandoned skid trails located within riparian management zones (RMZs) or streamside management zones (SMZs) would not be used during harvest operations.
- Ground-based harvesting equipment would be operated on slopes up to 45%. Most equipment operations would occur on slopes  $\leq 35\%$ .
- To prevent soil compaction ground-based mechanical felling and yarding would be restricted to one or more of the following conditions:
  - Soil moisture content at 4-inch depth less than 20% oven-dry weight.
  - Minimum frost depth of 4 inches.
  - Minimum snow depth of 18 inches of loose snow or 12 inches packed snow.
- At the end of skidding operations, close skid trails with earthen berms at intersections with open roads to deter the risk of skid trails becoming illegal ATV and vehicle trails. Similarly, to reduce erosion and concentration of surface flow on skid trails, install water bars **and** cover with slash.
- Areas surrounding open road corridors would be buffered with slash and CWD to deter unauthorized motorized access beyond open road corridors.

### **Environmental Effects**

Soil Disturbance and Productivity	Impact with mitigation											
	Direct				Secondary				Cumulative			
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High
<b>Action</b>												
Slope Stability	X				X				X			
Physical Disturbance (Compaction and Displacement)		X			X					X		
Erosion		X			X					X		
Nutrient Cycling		X			X					X		
Soil Productivity		X			X					X		

### **Soil Comments**

- C1.** Slope stability – Slopes in the project area are considered stable with low to no vulnerability to mass wasting because of the project. Project design includes proposed temporary road building on mild slopes and improving road drainage on existing roads which reduce the risk of slope and fill wasting. Most equipment operations would occur on slopes  $\leq 35\%$ . Therefore, we conclude there would be no risk of direct, secondary, or cumulative effects to slope stability as a result of the proposed project.
- C2.** Physical disturbance – Soils have high clay content and some existing roads and skid trails are in poorly drained areas that collect precipitation. Operations on these routes during moist conditions could result in high disturbance including rutting and displacement. Similarly, equipment harvesting and skidding during moist conditions could result in displacement and compaction of soils. Risks of soil disturbance would remain low with the implementation of soil mitigation measures listed earlier in this analysis.
- C3.** Erosion –The proposed operation would include new disturbances and disturbances to areas that were disturbed under previous timber harvest operations but have since revegetated (i.e., skid trails). Risks of soil erosion would remain low with the implementation of soil mitigation measures listed earlier in this analysis.
- C4.** Nutrient cycling and productivity – The project is designed to harvest merchantable timber, remove diseased and infested trees, improve forest health, and reduce stocking levels to improve growth productivity. The project design includes leaving sufficient slash and CWD to maintain soil nutrient cycling and productivity. Specifically, 5 to 15 tons/acre of course and fine woody debris would be left within harvest areas to ensure soil protection and return of nutrients to soils.
- C5.** Secondary impacts – Secondary impacts occur at a different location or later in time than the action that triggers the effect. Potential secondary soil impacts associated with the project include increased unauthorized vehicle access on undesignated routes due to reduced vegetative cover and deterrence.



## **Soil References**

- Brown, J.K., Handbook for Inventorying Downed Woody Material. USDA Forest Service Intermountain Forest and Range Experiment Station. GTR-IINT-16. September 1974.
- DNRC, 1996. State Forest Land Management Plan. Department of Natural Resources and Conservation, Forest Management Bureau. Missoula, MT. 1996.
- DNRC, 2009. DNRC compiled soils monitoring report on timber harvest projects, 1988-2005, 2<sup>nd</sup> Reprint Edition. Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, MT.
- DNRC, 2011. DNRC compiled soils monitoring report on timber harvest projects, 2006-2010. Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, MT.
- Graham, R.T., Harvey, A.E., Jurgensen, M.F., Jain, T.B., Tonn, J.R., and Page-Dumroese, D.S., 1994, Managing Course Woody Debris in Forests of the Rocky Mountains. U.S. Forest Service Research Paper INT-RP-477. Intermountain Research Station. 16 p.
- Lonn, J.D., C. McDonald, J.W. Sears, and L.N. Smith, 2010, Geologic Map of the Missoula East 30' x 60' Quadrangle, Western Montana. Montana Bureau of Mines and Geology, Open File MBMG 593, Plate 2. [http://mbmg.mtech.edu/pdf\\_100k/missoulaEast\\_593-tiled.pdf](http://mbmg.mtech.edu/pdf_100k/missoulaEast_593-tiled.pdf)
- NRCS (Natural Resources Conservation Service), 2017a, Soil Survey of the Granite County Area, Montana. Version 17, September 21, 2017.
- NRCS, 2017b, Soil Survey of the Powell County Area, Montana. Version 14, September 21, 2017.

## **WATER QUALITY AND QUANTITY**

### ***Water Quality and Quantity Existing Conditions***

The project area spans a watershed boundary and is contained within the sub-watersheds listed below. The project section is located along the Garnet Range divide and the west half of the section is drained by an unnamed tributary of Rattler Gulch and the east half of the section is drained by ephemeral, intermittent, and perennial drainages that form the headwaters of Black Bear and Bear Creek that flow to Douglas Creek and ultimately Nevada Creek. Figure W1 indicates identified surface waters, wetlands, roads (existing and proposed), and stream crossings within the project area.

<b>Sub-watershed (6<sup>th</sup> level)</b>	<b>12-digit Hydrologic Unit Code</b>	<b>Description</b>
Rattler Gulch	170102020605	Drainage area is 9,851 acres and is tributary to the Clark Fork River and is within the Upper Clark Fork Basin.
Upper Sturgeon Creek	170102030413	18,247 acres and is tributary to Lower Sturgeon Creek, Douglas Creek, and Nevada Creek.

Rattler Gulch is 2,200 feet west and downstream of the project area, is a B-1 water use class<sup>2</sup>, and is listed as an impaired stream in the Central Clark Fork Basin Total Maximum Daily Load (TMDL) Project Area for not meeting aquatic life water quality standards for Total Phosphorous (TP) and Sedimentation/Siltation. Elevated TP is attributed primarily to grazing and sedimentation associated with silviculture activities and forest roads (DEQ 2014). Specifically, the TMDL for Rattler Gulch sites livestock grazing in the stream channel and along the riparian corridor in the upper reaches of the watershed and notes that the volcanic parent material in the watershed results in soils that have a great risk of erosion and are likely phosphorous rich compared to other local soils (DEQ 2014). As of 2014, an 81.7 % reduction of human-caused sources of TP is needed within the Rattler Gulch watershed to meet the TMDL and meet aquatic life water quality standards (DEQ 2014). Non-pollutant impairment causes cited by the DEQ for Rattler Gulch include alteration in streamside or littoral vegetative covers, Chlorophyll-a, and low flow alterations. The vegetative cover impairment is also attributable to grazing and forest roads. Chlorophyll-a and excess algal growth are caused by excess concentrations of nutrients. See further discussion of low flow alterations in the Fisheries section of this EAC.

Unnamed perennial tributaries to Bear Creek and Black Bear Creek are tributary to or are classified as B-1 in use class. These streams are located in the eastern side of the project area. Approximately 2 miles downstream of the project area Black Bear Creek is listed as impaired in the Middle Blackfoot-Nevada Creek TMDL Project Area as non-supporting of aquatic life, cold water fishery, and contact recreation uses due to stream-side vegetation cover alterations, sedimentation/siltation, and suspended/bedload solids. Sources of these impairments include riparian grazing, managed pasture grazing, silviculture, and forest road construction/use (DEQ 2008). Bear Creek is not listed as impaired on the 303(d) list.

Past and current disturbances in the project area include timber harvest, vegetation management, grazing, roads, and recreational use. Known specifics on these past and current disturbances are listed below.

- Previous selection harvest over 60 years ago and earlier selective harvests.
- Permitted and unpermitted fuel wood collection.
- The section containing the project (T12N, R13W, S36) currently has an active grazing license with the State that currently allows for 67 animal unit grazing for one month (AUM) between June 1 and September 30<sup>th</sup> and expires February 2027.
- Open roads, easements, and a road user association (RUA) road have regular year-around use.
- Road improvements completed in 2012.
- Unauthorized use of some closed roads and skid trails.
- The project area is popular with local hunters and recreational users.
- No recent fire activity.

Evidence of past and current disturbances within the project area potentially effecting water quality include road and skid trail erosion with sedimentation risk, channel and bank disturbances associated with road and skid trail crossings, and livestock-caused hoof pugging and sheer and hummocks occur along all riparian corridors.

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<sup>2</sup> Waters classified as B-1 are suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

### ***Summary of proposed activities and project design elements that avoid and minimize water quality impacts***

Below is a list of project elements that reduce the potential water quality impacts. These project elements can be considered mitigation.

- Drainage improvement and maintenance work would be completed on existing roads within state lands and on the haul route between the project area and the nearest county road. The project manager has completed a road log for location and design of drainage improvements on existing roads.
- Existing skid trails would be used as much as possible. However, abandoned skid trails located within riparian management zones (RMZs) and streamside management zones (SMZs) would not be used during harvest operations.
- Proposed new temporary road construction would not cross streams or enter RMZs and SMZs.
- The perennial stream located in the southeastern portion of the project area (tributary to Bear Creek) would have an 80-foot RMZ.
- No harvest is planned within RMZs and SMZs.
- Applicable requirements of the following plans, rules, and practices would be applied and administered during the project. Those relevant to water quality protections are listed below.
  - The Administrative Rules for Forest Management, specifically Rules Chapter 36.11.421 through 36.11.426
  - The Montana Forestry Best Management Practices
  - The Montana Streamside Management Zone Law
  - The State Forest Land Management Plan (DNRC, 1996)
  - The Montana Stream Protection Act (SPA)

### ***Water Quality Mitigations***

- M1.** The soil mitigations 1 and 2 listed in the ***Soil Disturbance and Productivity*** section are also recommended for water quality protection as they reduce the risk of soil disturbance and erosion that can lead to sedimentation.

### ***Water Quality and Quantity Comments***

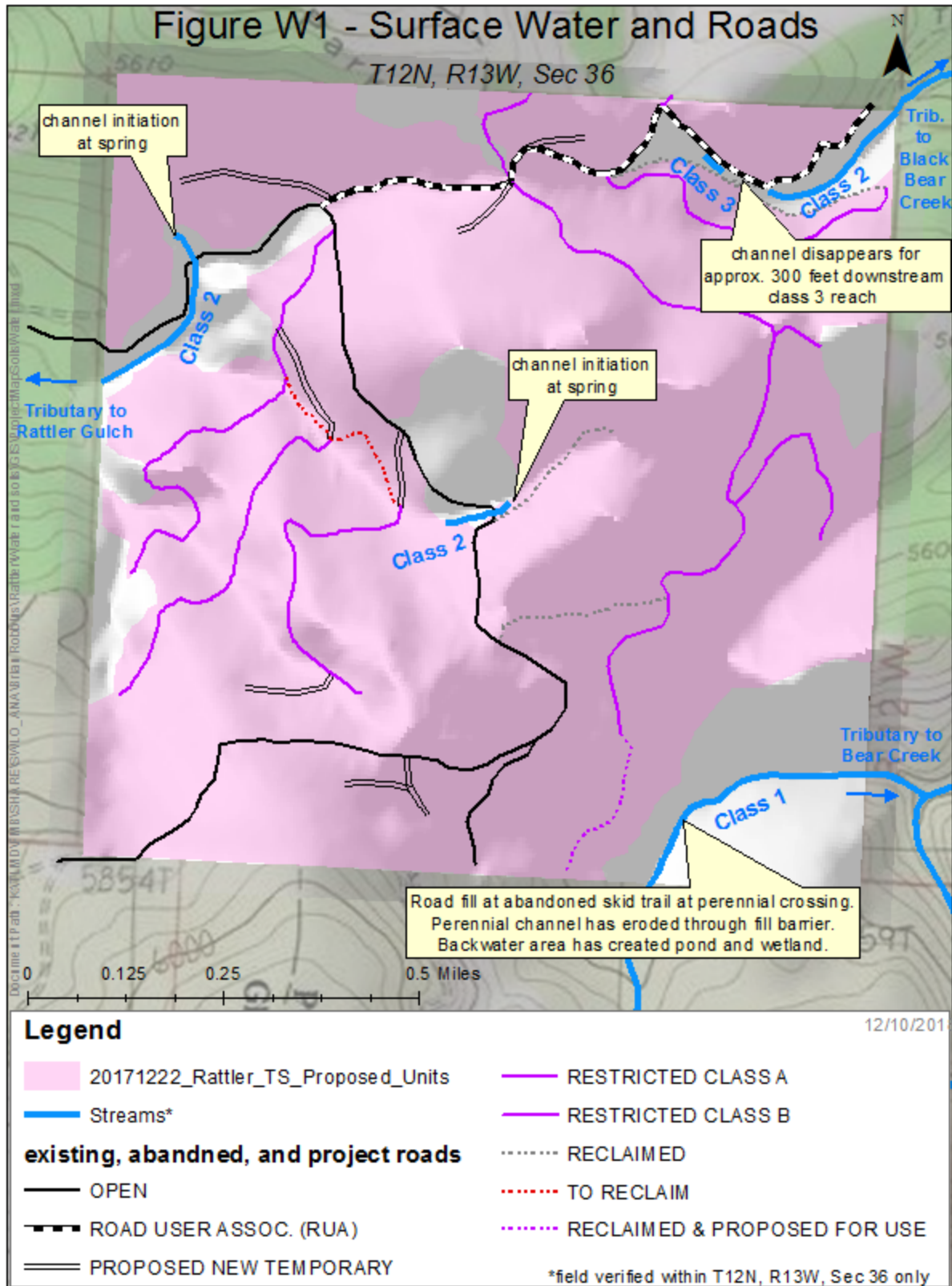
- C1.** Water quality – Water quality in the watershed analysis areas is impacted or is at risk under current conditions due to inadequate road drainage and grazing pressure in riparian areas. Project activities including application and administration of road drainage improvements would reduce and mitigate water quality issues associated with authorized and unauthorized road use. Water quality impacts and risks associated with grazing would not be addressed by the proposed project.

Existing road erosion issues are caused by inadequate road drainage and routine year around road use during wet conditions. These conditions are likely to persist under the no action and the proposed action alternatives. Proposed implementation of road drainage improvements associated with the project would mitigate some of these existing erosion issues compared to no action. Project design including improvement

of existing roads and road construction to current drainage standards would reduce the erosion risk associated with the project and motorized use during and after project completion.

- C2.** Water quantity – An increased water yield would likely occur due to the removal of vegetation associated with the harvest. The resulting change in runoff volume and timing (water yield) is not expected to be measurable; nor is the change in water yield expected to have an effect on channel stability.

Water Quality & Quantity	Impact with mitigation											
	Direct				Secondary				Cumulative			
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High
<b><i>No-Action</i></b>												
Water Quality			X			X				X		
Water Quantity		X				X				X		
<b><i>Action</i></b>												
Water Quality		X			X					X		
Water Quantity		X				X				X		



### ***Water Quality and Quantity References***

Montana DEQ. 2014. Final Central Clark Fork Basin Tributaries TMDLs and Water Quality Improvement Plan. Helena, MT: Montana Dept. of Environmental Quality.

Montana DEQ. 2008. Middle Blackfoot-Nevada Creek Total Maximum Daily Loads and Water Quality Improvement Plan. Helena, MT: Montana Dept. of Environmental Quality.

## **FISHERIES**

### ***Fisheries Existing Conditions***

The west half of the project area is drained by an unnamed tributary of Rattler Gulch and the east half of the section is drained by ephemeral, intermittent, and perennial drainages that form the headwaters of Black Bear and Bear Creek that flow to Nevada Creek.

Rattler Gulch is tributary to the Clark Fork River; however, the lower reaches of Rattler Gulch, below the project area, flows intermittently with loss of water in the channel attributable to sub-drainage across limestone and alluvium near the mouth (DEQ 2014). Also, the Rattler Gulch Road alignment below the project area is in the middle of the riparian corridor and former stream bed (DEQ 2014). Due to the intermittent flow and past obliteration of what presumably had once been a channel, Rattler Gulch does not have direct surface water connectivity with the Clark Fork River for most of the year. Fish have not been observed in Rattler Gulch or in waters connected with Rattler Gulch within the project area.

Black Bear Creek is tributary to Bear Creek. The confluence of the two creeks is approximately 2 miles northeast of the project area in the upper Douglas Creek watershed. Black Bear Creek is considered non-supporting of aquatic life and cold-water fishery (DEQ 2008). Impairments include riparian grazing, managed pasture grazing, silviculture, and forest road construction/use (DEQ 2008). Fish have not been observed in the unnamed tributaries to Black Bear and Bear Creeks within the project area. The most recent TMDL and water quality improvement plan for the watershed site conditions including physical fish barriers (i.e., crushed and undersized culvert and reduced stream flow from irrigation). These barriers do not exist within the project area.

Because fish are not present in the project area or in surface waters adjacent to the project area, fisheries are dismissed from further analysis.

### ***Fisheries References***

Montana DEQ. 2014. Final Central Clark Fork Basin Tributaries TMDLs and Water Quality Improvement Plan. Helena, MT: Montana Dept. of Environmental Quality.

Montana DEQ. 2008. Middle Blackfoot-Nevada Creek Total Maximum Daily Loads and Water Quality Improvement Plan. Helena, MT: Montana Dept. of Environmental Quality.

## WILDLIFE:

Evaluation of the impacts of the No-Action and Action Alternatives including **direct, indirect, and cumulative** effects on Wildlife.

**Wildlife Existing Conditions:** The project area is a mix of forested Douglas-fir and lodgepole pine stands. Individual grizzly bears could occasionally use the project area while dispersing or possibly foraging. The project area contains approximately 292 acres of potential Canada lynx habitat, which is mostly other suitable (249 acres), with a smaller amount of winter foraging habitats (43 acres). Canada lynx habitats in the project area are generally disconnected and exist in a matrix of non-suitable habitats. Potential habitat exists for flammulated owls (327 acres) and pileated woodpeckers (581 acres) in the project area. Gray wolves have been documented in the vicinity in the past. Big game summer habitat exists in the project area but no big game winter range exist in the project area. Elk security habitats do not exist in the project area.

**No-Action:** No potential for disturbance to wildlife would be anticipated. No timber management activities would be conducted, thus no appreciable changes to existing habitats would occur. Continued maturation within existing stands could improve Canada lynx habitats, pileated woodpecker foraging habitats, and big game summer range attributes, but could reduce habitat quality for flammulated owls over the long term. Generally, negligible direct, indirect, or cumulative effects would occur.

### **Action Alternative (see Wildlife table below):**

Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
Threatened and Endangered Species										
Grizzly bear (Ursus arctos) Habitat: Recovery areas, security from human activity		X				X			Y	W-1
Canada lynx (Felix lynx) Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone		X				X			Y	W-2
Yellow-billed Cuckoo (Coccyzus americanus) Habitat: Deciduous forest stands of 25 acres or more with	X				X					W-3

Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
dense understories and in Montana these areas are generally found in large river bottoms										
Sensitive Species										
Bald eagle ( <i>Haliaeetus leucocephalus</i> ) Habitat: Late- successional forest within 1 mile of open water	X				X					W-3
Black-backed woodpecker ( <i>Picoides arcticus</i> ) Habitat: Mature to old burned or beetle-infested forest	X				X					W-3
Coeur d'Alene salamander ( <i>Plethodon idahoensis</i> ) Habitat: Waterfall spray zones, talus near cascading streams	X				X					W-3
Columbian sharp- tailed grouse ( <i>Tympanuchus Phasianellus columbianus</i> ) Habitat: Grassland, shrubland, riparian, agriculture	X				X					W-3
Common loon ( <i>Gavia immer</i> ) Habitat: Cold mountain lakes, nest in emergent vegetation	X				X					W-3
Fisher ( <i>Martes pennanti</i> ) Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian	X				X					W-4

Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
<b>Flammulated owl</b> <i>(Otus flammeolus)</i> Habitat: Late-successional ponderosa pine and Douglas-fir forest		X				X			Y	W-5
<b>Gray Wolf</b> <i>(Canis lupus)</i> Habitat: Ample big game populations, security from human activities		X				X			Y	W-6
<b>Harlequin duck</b> <i>(Histrionicus histrionicus)</i> Habitat: White-water streams, boulder and cobble substrates	X				X					W-3
<b>Northern bog lemming</b> <i>(Synaptomys borealis)</i> Habitat: Sphagnum meadows, bogs, fens with thick moss mats	X				X					W-3
<b>Mountain plover</b> <i>(Charadrius montanus)</i> Habitat: short-grass prairie & prairie dog towns	X				X					W-3
<b>Peregrine falcon</b> <i>(Falco peregrinus)</i> Habitat: Cliff features near open foraging areas and/or wetlands	X									W-3
<b>Pileated woodpecker</b> <i>(Dryocopus pileatus)</i> Habitat: Late-successional ponderosa pine and larch-fir forest		X				X			Y	W-7
<b>Townsend's big-eared bat</b>	X				X					W-3

Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
<i>(Plecotus townsendii)</i> Habitat: Caves, caverns, old mines										
<b>Wolverine</b> <i>(Gulo gulo)</i> Habitat: Alpine tundra and high-elevation boreal forests that maintain deep persistent snow into late spring	X				X					W-3
<b>Big Game Species</b>										
<b>Elk</b>		X				X			Y	W-8
<b>Whitetail</b>		X				X			Y	W-8
<b>Mule Deer</b>		X				X			Y	W-8
<b>Other</b>	X				X					

*Comments:*

W-1 The project area is 22 miles south of the Northern Continental Divide Ecosystem grizzly bear recovery area and is 0.5 miles southwest of 'occupied' grizzly bear habitat as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones (Wittinger et al. 2002). Extensive use by grizzly bears would not be expected, but individual bears could occasionally use the project area while dispersing or possibly foraging. Presently there are about 2.9 miles of uncontrolled roads and about 573 acres of potential grizzly bear hiding cover in the project area. Within the cumulative effects analysis area, extensive open habitats exist (67%) and relatively limited forested habitats (28%) exist that may be providing grizzly bear hiding cover. Additionally, open road densities are relatively high in the cumulative effects analysis area with 2.2 miles/sq. mile. Proposed activities would not construct any new permanent roads but, could construct roughly 0.75 mile of temporary road in the project area. Thus, no changes in permanent open road densities and a small increase in total road densities would occur. Approximately 508 acres (89%) of potential hiding cover would be removed with the proposed activities. Should a grizzly bear be in the vicinity during proposed activities, potential for disturbance could occur, but this would only occur during proposed activities, which would be a relatively short period (2-4 years) of time. Activities would largely avoid the spring period, minimizing potential disturbance and displacement from important habitats during the sensitive spring period. Overall negligible changes in human-bear interactions would be anticipated. Mitigations to minimize potential for introducing attractants to bears would be applied, which would further reduce the potential for human/bear interactions. Proposed habitat modification would be additive to the effects associated with past timber harvesting in the cumulative-effects analysis area as well as any ongoing harvesting.

- W-2 The project area contains approximately 292 acres of potential Canada lynx habitat, which is mostly other suitable (249 acres), with a smaller amount of winter foraging habitats (43 acres). Canada lynx habitats in the project area are generally disconnected and exist in a matrix of non-suitable habitats. Similarly, the cumulative effects analysis area has considerable non-suitable habitats intermixed with some forested habitats that may contain some limited, potentially suitable habitats for Canada lynx. Connectivity between potentially suitable habitats in the vicinity is limited due to the high percentage of unsuitable and open habitats in the vicinity. Generally, little or no use of the project area and cumulative effects analysis area by Canada lynx would be anticipated. Proposed activities would occur on approximately 226 acres of other suitable habitats (91%) and 18 acres of winter foraging habitats (42%). Stands proposed for treatment would be expected to drop below the 40% canopy closure threshold that differentiates between suitable and temporary non-suitable habitats due to anticipated retention levels, harvesting corridors, skid trails, damage to sub-merchantable trees, landings, and low original stand density. The remaining patches of potential lynx habitats (approximately 49 acres) would likely also be largely unsuitable given they would be scattered, disconnected, and surrounded by a combination of temporary non-suitable or non-lynx habitats. Thus all of the lynx habitats in the project area would be temporarily unsuitable for lynx following proposed treatments. The retention of patches of advanced regeneration of shade-tolerant trees in foraging habitats (confined to the southeast corner of the section) would break-up sight distances, provide horizontal cover, and provide forest structural attributes preferred by snowshoe hares and lynx. Coarse woody debris would be retained (emphasizing retention of some logs 15 inches dbh and larger) to provide some horizontal cover and security structure for lynx. The areas proposed for harvest would be expected to regenerate and have sufficient growth to provide cover and forage for potential prey species within 10-15 years should lynx be using the vicinity. Proposed activities would not appreciably alter forested connectivity in the vicinity given the matrix of habitats in the vicinity. Proposed habitat modification would be additive to the effects associated with past timber harvesting in the cumulative-effects analysis area as well as any ongoing harvesting.
- W-3 The project area is either out of the range of the normal distribution for this species or suitable habitat is not present. Thus, no direct, indirect, or cumulative effects would be anticipated.
- W-4 A small amount of potential fisher habitats exist in the project area, but activities are not proposed in this potential habitat under either alternative. Thus, no direct, indirect, or cumulative effects would be anticipated.
- W-5 There are approximately 327 acres of potential flammulated owl habitats in dry Douglas-fir stands across the project area. Some suitable habitats exist in the cumulative effects analysis area. Flammulated owls can be tolerant of human disturbance (McCallum 1994), however the elevated disturbance levels associated with proposed activities could negatively affect flammulated owls should activities occur when flammulated owls are present. Proposed activities could overlap the nestling and fledgling period. Since some snags would be retained, loss of nest trees would be expected to be minimal. Proposed activities on 284 acres (87%) of potential flammulated owl habitats would open the canopy while favoring Douglas-fir. The more open stand conditions and the maintenance of snags would move the project area toward historical conditions, which is preferred flammulated owl habitat.

- W-6 Wolves have been documented in the project area in the past. No known den or rendezvous sites occur in the project area, but some use of the project area by wolves could occasionally occur for breeding, hunting, or other life requirements. Big game species exist in the vicinity much of the year but winter range for big game species is not in the project area. Any wolves using the area could be disturbed by proposed activities and are most sensitive at den and rendezvous sites, which are not known to occur in the project area or within 1 mile of the project area. Disturbance at potential den sites and rendezvous sites could occur if these features are in the vicinity and operations were conducted during the spring period; however, given the location of the project area on the landscape and the somewhat limited potential for harvest during the early spring period when wolves could use the project area for den or rendezvous sites, potential for disturbance would likely be reduced. Should either a den or rendezvous site be identified within 1 mile of the project area, a DNRC biologist would be consulted to determine if additional mitigations would be necessary. In the short-term, the proposed activities could lead to slight shifts in big game use, which could lead to a shift in wolf use of the area. Proposed activities would alter canopy closure and summer big game habitat, which could alter some big game use of the area, but would not be expected to appreciably alter wolf prey abundance.
- W-7 Roughly 581 acres of potential pileated woodpecker habitat exist in the project area, with most stands being Douglas-fir and/or lodgepole pine stands, which pileated woodpeckers may use for foraging habitats but generally won't use for nesting. Thus, extensive use of the project area by pileated woodpeckers would not be expected. Within the cumulative effects analysis area, considerable open habitats and young forested stands exist, that likely limits use of the cumulative effects analysis area by pileated woodpeckers. Disturbance to pileated woodpeckers could occur if proposed activities occur during the nesting period. Proposed harvesting would reduce forested habitats for pileated woodpeckers in the project area. Roughly 527 acres (91%) of potential habitat would be too open to be used by pileated woodpeckers following proposed treatments. Proposed timber management activities would reduce stand density on 528 acres. Elements of the forest structure important for nesting pileated woodpeckers, including snags, coarse woody debris, numerous leave trees, and snag recruits would be retained in the proposed harvest areas. Since pileated woodpecker density is positively correlated with the amount of dead and/or dying wood in a stand (McClelland 1979), pileated woodpecker densities in the project area would be expected to be reduced on 528 acres. Reductions to pileated woodpecker associated with this alternative would be additive to the effects of past timber management as well as any ongoing harvesting across the cumulative effects analysis area.
- W-8 The project area contains suitable habitat for white-tailed deer, mule deer, and elk. Little or no winter range exists in the project area. Proposed activities could occur in the winter or non-winter periods but, would avoid the general big game hunting season. Disturbance from mechanized logging equipment and trucks could temporarily displace big game animals during the summer, however considerable other suitable habitats exist in the vicinity, which would minimize the effects to big game species. No long-term effect to summer range would be anticipated. Proposed activities would not prevent big game movement through the project area appreciably and could stimulate browse production in the proposed units. Proposed activities would avoid the big game hunting seasons, thus no further disturbance to big game during the hunting seasons would occur and no changes to recreational hunting opportunities would occur. Potential big game hiding

cover exists in the project area, but no big game security habitat exists in the project area due to the location of existing open roads and the presence of relatively open habitats in parts of the project area and on other ownerships in the vicinity. No changes in open roads would occur and efforts to reinforce existing closure devices would ensure no increases in motorized access to the section would occur. Overall decreases in hiding cover would be anticipated, but no changes in available security habitats in the project area or cumulative effects analysis area due to the habitats present and the locations of existing roads.

***Wildlife Mitigations:***

- A DNRC biologist will be consulted if a threatened or endangered species is encountered to determine if additional mitigations that are consistent with the administrative rules for managing threatened and endangered species (ARM 36.11.428 through 36.11.435) are needed.
- Motorized public access will be restricted at all times on restricted roads that are opened for harvesting activities; signs will be used during active periods and a physical closure (gate, barriers, equipment, etc.) will be used during inactive periods (nights, weekends, etc.). These roads and skid trails would be reclosed to reduce the potential for unauthorized motor vehicle use.
- Minimize potential for disturbance to grizzly bears and numerous avian species by restricting activities between March 1 and June 1.
- Snags, snag recruits, and coarse woody debris will be managed according to *ARM* 36.11.411 through 36.11.414, particularly favoring ponderosa pine. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snags. Coarse woody debris retention would emphasize retention of downed logs of 15-inch diameter or larger.
- Contractors and purchasers conducting contract operations will be prohibited from carrying firearms while on duty.
- Food, garbage, and other attractants will be stored in a bear-resistant manner.
- Provide connectivity by maintaining corridors of unharvested and/or lighter harvested areas along riparian areas, ridge tops, and saddles.
- Retention of patches of advanced regeneration of shade-tolerant trees would break-up sight distances, provide horizontal cover, and provide forest structural attributes preferred by snowshoe hares and lynx.

***Wildlife References***

McCallum, D. A. 1994. Review of technical knowledge: flammulated owls. Pages 14-46 in G. D. Hayward and J. Verner, tech eds. Flammulated, boreal, and great gray owls in the United States: a technical conservation assessment. USDA Forest Service Gen. Tech. Rep. RM-253. Fort Collins, Colorado.

McClelland, B.R. 1979. The pileated woodpecker in forests of the Northern Rocky Mountains. Pages 283-299 *in* Role of insectivorous birds in forest ecosystems. Academic Press.

Wittinger, W.T. 2002. Grizzly bear distribution outside of recovery zones. Unpublished memorandum on file at USDA Forest Service, Region 1. Missoula, Montana. 2pp.

**AIR QUALITY:** The proposed harvest is not within a Class 1 airshed or impact zone. A minor amount of particulate would be generated under the action alternative.

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Smoke	X				X				X					
Dust	X				X				X					
<b>Action</b>														
Smoke		X				X				X				1.
Dust		X				X				X				

*Comments:* Burning would be completed in accordance to the rules of the Montana Idaho Smoke Management Coordination Group.

### ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Historical or Archaeological Sites	X				X				X					1
Aesthetics	X				X				X					
Demands on Environmental Resources of Land, Water, or Energy	X				X				X					
<b>Action</b>														
Historical or Archaeological Sites	X				X				X					1
Aesthetics	X				X				X					
Demands on Environmental Resources of Land, Water, or Energy	X				X				X					

*Comments:*

1. The tribes were scoped, but no response was received. DNRC archaeologist, Patrick Rennie conducted a Class III cultural and paleontological resources inventory of the Area of Potential Effect (APE). As such, the proposed timber sale will have *No Effect* to *Antiquities* as defined under the Montana State Antiquities Act. A formal report of findings has been prepared and is on file with the DNRC and the Montana State Historic Preservation Officer.

**OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:** *List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.*

- None

## Impacts on the Human Population

Evaluation of the impacts on the proposed action including **direct, secondary, and cumulative** impacts on the Human Population.

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Health and Human Safety	X				X				X					
Industrial, Commercial and Agricultural Activities and Production	X				X				X					1
Quantity and Distribution of Employment	X				X				X					
Local Tax Base and Tax Revenues	X				X				X					
Demand for Government Services	X				X				X					
Access To and Quality of Recreational and Wilderness Activities	X				X				X					
Density and Distribution of population and housing	X				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					
<b>Action</b>														
Health and Human	X													

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Safety														
Industrial, Commercial and Agricultural Activities and Production	X				X				X					
Quantity and Distribution of Employment		X				X				X				
Local Tax Base and Tax Revenues	X				X				X					
Demand for Government Services	X				X				X					
Access To and Quality of Recreational and Wilderness Activities	X				X				X					
Density and Distribution of population and housing	X				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					

*Comments:* 1. The section is currently licensed under a forested grazing license with a grazing capacity evaluated at 67 AUM's. No change is anticipated with either alternative.

**Locally Adopted Environmental Plans and Goals:** *List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.*

- None

**Other Appropriate Social and Economic Circumstances:**

Costs, revenues and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a market value for stumpage. These sales have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, terms of sale, or anything that could affect a buyer's willingness to pay.

**No Action:** The No Action alternative would not generate any return to the trust at this time. The current grazing lease would remain.

**Action:** The timber harvest would generate additional revenue for the Common School Trust. The estimated return to the trust for the proposed harvest is \$462,000 based on an estimated harvest of 3,200 MBF (23,100 tons) and an overall stumpage value of \$20 per ton. Costs,

revenues, and estimates of return are estimates intended for relative comparison of alternatives, they are not intended to be used as absolute estimates of return.

**Does the proposed action involve potential risks or adverse effects that are uncertain but extremely harmful if they were to occur?**

None anticipated.

**Does the proposed action have impacts that are individually minor, but cumulatively significant or potentially significant?**

None anticipated.

### **Environmental Assessment Checklist Prepared By:**

**Name: Brian Robbins**

**Title: Unit Manager**

**Date: December 20, 2018**

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## **Finding**

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### **Alternative Selected**

The EA Checklist has analyzed and disclosed the potential environmental impacts of two alternatives:

1. Proposed Action
2. No Action

I have decided to approve the Proposed Action with all mitigations and controls recommended in the EA Checklist and is hereby adopted. My decision is based on a thorough review of the environmental assessment and the following conclusions arrived at through that review:

- 1) I conclude that the proposed action will achieve the project objectives of a) mitigating adverse insect impacts and restoring the forest to its income generating potential and b) capturing timber values at imminent risk of loss.
- 2) I further conclude that, by virtue of design, mitigations and controls adopted and integrated into the proposed action, the project objectives will be achieved in a manner that avoids significant adverse impacts to the human and physical environment.

I am also satisfied that the proposed action has been developed through an appropriate process involving public participation, interdisciplinary methods and inter-entity consultations; that it reflects understandings, conclusions and agreements arrived at through such collaborative work; and that it is true and faithful to the trust land mission provided by the Montana

Constitution and forestry laws of the State of Montana, as well as principles laid out in the State Forest Land Management Plan and Rule under which policy the trust land forestry mission is pursued.

### Significance of Potential Impacts

I am satisfied that all pertinent resources and environmental values have been properly identified and studied through the project development process. Based on my review of the environmental analysis, I have concluded that the proposed action will not cause any significant adverse impacts - direct, secondary or cumulative - on the human and physical environment.

With respect to the significance of potential impacts, I find there are none that should be regarded as severe, enduring, geographically widespread or frequent.

Further, I find that the quantity and quality of the various resources, including any that may be considered unique or fragile, will not be adversely affected to a significant degree and that the seven criteria for determining significance of impacts contained in ARM 26.2.644 have been addressed completely. I find in the proposed action no precedent for future actions that would cause significant impacts and I find no conflict with local, state or federal laws, requirements or formal plans. In summary, I find that some adverse impacts are avoided altogether by means of project design and that others are controlled and mitigated to the extent that they do not become significant.

### Need for Further Environmental Analysis

☐

EIS

☐

More Detailed EA

☒

No Further Analysis

### Environmental Assessment Checklist Approved By:

**Name: Jon M. Hayes**

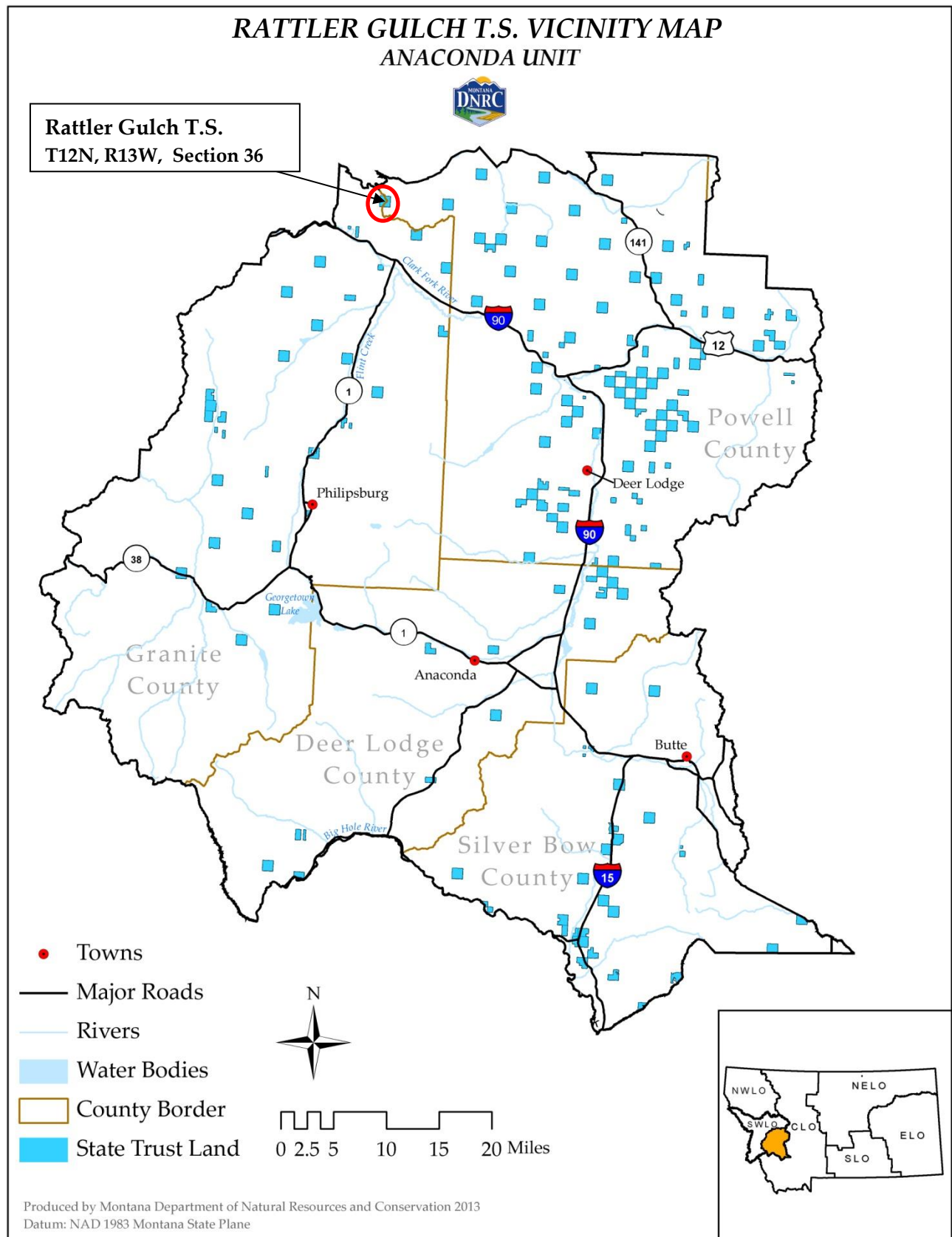
**Title: SWLO Forest Management Program Manager**

**Date: January 16, 2019**

**Signature: /Jon M. Hayes/**

## **Attachment A- Maps**

A-1: Timber Sale Vicinity Map



A-2: Timber Sale Harvest Units:

